

## Correspondence

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## Contents

- Neurohawks fight back
- Psychopathic traits and studies of deception
- Lithium in drinking water and food, and risk of suicide
- Psychosis and catatonia as a first presentation of antiphospholipid syndrome

## Neurohawks fight back

Bullmore *et al*<sup>1</sup> mount a defence of neuroscience in psychiatry, invoking history, a dawning golden age, Reil and Freud. Although ensuring that the curriculum for undergraduates and trainees should accurately reflect what is valuable for doctors wishing to understand and treat mental disorders, they do not fulfil the ambitions of their manifesto. Their argument against neuro-scepticism is weak. Specifically, physical models for mental disorder imply a particular position on psychology which is known as analytical behaviourism, and which effectively denies the existence of mind as a reasonable concept. They may wish to advance this view but either do not realise it or do not say so.

Neuroscience is a materialist enterprise that generates and examines hypotheses about brain function, which may inform new ways of looking at mental life: but psychiatry cannot be 'based' on neuroscience without becoming neurology. If psychiatrists cease to occupy the no man's land of unknowability, others will. The point about reductionism is a parallel problem. The kind of conversation that psychiatrists engage in with patients could well be better informed by neuroscience, but the reason for contemporary 'vague talk about neurotransmitters' is that the innumerable diagnostic categories invented in psychiatry bear no relation to discrete pathognomonic anomalies: nobody would base a diagnosis of schizophrenia on a brain image whether functional or structural. Patients do not need to see their brains light up to know that they are experiencing voices. In psychiatry there is an underrated crisis of validity, which many get around by claiming that psychiatry is where the rest of medicine was before the discovery of microbes and so on. An alternative view would be that schizophrenia, for example, is indeed a 'functional' disorder: an illness but not a disease, an illness that is culturally plastic and to a great extent subjective in its essence.

Finally, the authors claim to refute the allegation that neuroscience is relatively bereft of therapeutic achievement. They fail to provide a single example of a 'neuroscientific' novelty since the 1960s that has transformed any really notable aspect of outcome in psychiatry. The one really big change, de-institutionalisation, could have occurred without any input from neuroscience at all; in fact, it was in large part a reaction against biomedicalism. It is doubtful that it would be deemed necessary to place yet another prominent polemical article in the *Journal* in defence of narrowly conceived neuroscientific hegemony within psychiatry, were this not the case.

- 1 Bullmore E, Fletcher P, Jones PB. Why psychiatry can't afford to be neurophobic. *Br J Psychiatry* 2009; **194**: 293–5.

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Bullmore *et al*<sup>1</sup> argue for psychiatry to continue to develop as a neuroscientific discipline, rebutting what they describe as 'neurophobic' views of mental illness. I share their enthusiasm for further understanding the biological basis of psychological conditions, and the article highlights an unhealthy division that continues to cause debate and disagreement in those treating mental illness. It often manifests itself in day-to-day clinical practice and is expressed by those that view mental illness as 'psychological' and those that look for a 'biological' explanation. Obviously the two cannot be separated – unless clinging to a Cartesian dualistic viewpoint, one must be optimistic that all mental life will eventually be mapped onto a neuronal substrate.

Proponents of both approaches would do well to familiarise themselves with David Marr,<sup>2</sup> acknowledged as the founder of computational neuroscience, and his concept of 'levels of analysis' which he applied to his seminal explanations of the visual system's information processing. He pointed out that one must be aware of the 'level' at which one is trying to explain a problem. Bullmore *et al* urge us to find explanations to mental functioning at the implementational level involving the biological substrate, i.e. genes, molecular and cellular interactions creating a complex system. Theories put forward by Beck and Seligman on explaining depression, for example, and Clark's work on panic disorder<sup>3</sup> are set at a higher level of explanation and do not address the implementation of the processes. For example, Clark postulated that it is a catastrophic interpretation of body state that leads to a panic attack. This level of explanation offers a psychological mechanism but does not comment on the biological underpinning of the disorder. This does not mean that Clark's explanation of panic attacks claims the disorder to be 'psychological' rather than 'biological'. Instead, the explanation is set at a computational level and not an implementational level.

To understand that brain-based and psychological explanations are not mutually exclusive but that they offer different levels of explanation will help avoid unnecessary debate. We can no more afford to be 'neurophobic' than we can afford to be 'psycho-phobic'; understanding at every level is vital in moving psychiatry forward as a discipline of medicine.

- 1 Bullmore E, Fletcher P, Jones PB. Why psychiatry can't afford to be neurophobic. *Br J Psychiatry* 2009; **194**: 293–5.
- 2 Marr D. *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information*. W.H Freeman, 1982.
- 3 Clark DM. A cognitive approach to panic disorder. *Behav Res Ther* 1986; **24**: 461–70.

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Bullmore *et al*<sup>1</sup> falteringly attempt to challenge 'neurophobic' positions in psychiatry, and then fail to present a persuasive argument for the increasing prominence of the neurosciences in psychiatry. They also contradict themselves in a number of places. For example, they argue that psychiatrists implicitly rely on neuroscience through prescribing drugs, suggesting that psychiatrists would not do so unless they believed that mental disorders are related to abnormal signalling between nerve cells,

but later on admit that the true mechanism of action of psychiatric drugs and the pathophysiology of mental disorders are unknown. Despite this, they conclude by advocating for more psychopharmacology in the MRCPsych curriculum.

Bullmore *et al* correctly highlight the false dichotomy between functional and organic disorders. However, they fail to acknowledge that disorders previously conceived as psychiatric, for which a neuropathology has been elucidated, are now considered neurological disorders and the preserve of neurologists. Huntington's disease and neurosyphilis are two examples. Consequently, they do not consider whether, if future neuroscientific research elucidates a neuropathology for the major mental disorders, these disorders would still be under the remit of psychiatrists. If not, perhaps there is little need for clinical psychiatrists to embrace the neurosciences.

They further note that objections to neurobiological research are based on concerns that the doctor–patient relationship would be fundamentally altered, to the patient's detriment. They argue that this is not the case for other medical specialties, where empathy and understanding are still important. However, Kleinman<sup>2</sup> notes that the doctor–patient relationship did indeed become a casualty of an increasingly scientific and technological medicine. Bullmore *et al* suggest that the neurosciences will reduce the stigma of mental illness. Yet, there is evidence that neurobiological models of mental disorder may actually increase stigmatising attitudes to the mentally ill and that clinicians who hold such views are less likely to involve patients in decisions about their care.<sup>3</sup>

They note the contention that physical models have not made any difference to clinical psychiatry, yet they provide no defence, only an optimistic future prediction that this will happen.

It is difficult to object to neurobiological research, but it is important to temper enthusiasm for its potential to revolutionise psychiatry. Not a single patient has benefited from neurobiological research into psychiatry, and although psychopharmacology is one of the success stories of modern psychiatry, our drugs are the result of serendipity rather than a true understanding of the neural and molecular basis of the mental phenomena that underpin the experiences diagnosed as mental disorder. This research is extremely expensive and may be occurring at the cost of social, epidemiological and psychological research for which it is increasingly difficult to secure funding. In contrast, such research has created evidenced-based interventions for mental illness. For example, the finding that high expressed emotion in families is associated with greater relapse in schizophrenia led to the development of family intervention,<sup>4</sup> and the finding that life events of an interpersonal nature were associated with the onset of depression led to the development of interpersonal therapy.<sup>5</sup> Perhaps psychiatry cannot afford to be neurophobic, but no evidence for this has thus far been provided.

- 1 Bullmore E, Fletcher P, Jones PB. Why psychiatry can't afford to be neurophobic. *Br J Psychiatry* 2009; **194**: 293–5.
- 2 Kleinman A. *The Illness Narratives: Suffering, Healing and the Human Condition*. Basic Books, 1988.
- 3 Read J, Haslam N, Sayce L, Davies E. Prejudice and schizophrenia: a review of the mental illness is an illness like any other approach. *Acta Psychiatr Scand* 2006; **114**: 303–18.
- 4 Kuipers E, Leff J, Lam D. *Family Work for Schizophrenia: A Practical Guide (2nd edn)*. Gaskell, 2002.
- 5 Klerman GL, Weissman MM, Rounsaville BJ, Chevron ES. *Interpersonal Psychotherapy of Depression*. Basic Books, 1984.

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Psychiatry rests on the biopsychosocial model rather like a three-legged stool: remove any one of the legs and the stool, and psychiatry, fall over. Another three-legged stool might be that of emotion, cognition and behaviour, each is necessary, but insufficient, for understanding humans.

In 'Why psychiatry can't afford to be neurophobic',<sup>1</sup> Bullmore *et al* give a compelling picture of the complexity and explanatory power of genotype and phenotype in modern psychiatry and neuroscience. They expand phenotype to include behaviour and cognition, and also refer to Reil's vision of psychiatrists as physicians of the mind. Reil (1759–1813) coined the term 'psychiatry' and was concerned with the soul and soul organ, which he considered to be a product of the nervous system.<sup>2</sup> Reil's conception of the soul would be considerably wider than cognitive function and behaviour. Living during the Romantic period, he was concerned with what today might be called emotions, character and self-regulation.

It is difficult to do justice to the full breadth of neuroscience in an editorial; however, neuroscience and psychiatry are far broader than genes, cognition and the intervening processes. Although the nod is given to psychoanalysis and the importance of 'mental, interpersonal, developmental and therapeutic processes', and 'maternal deprivation and child abuse', there is no reference to emotion and its mental representation, affect, and the rapidly growing fields of affective neuroscience, attachment theory, affect regulation, mentalisation and developmental psychopathology.

Biology, ethology and palaeoanthropology have shown that social living has been the most important recent evolutionary pressure for brain development.<sup>3</sup> Subjectivity is intrinsic to, and an emergent property of, our social brain.<sup>4</sup> Ethology and attachment theory have shown how emotions are the glue of social interactions; from the moment of birth we are instinctually driven to engage with others: attachment behaviours, smiling and crying are genetically programmed. The representation of affect states in self and other (mentalisation) is vital to affect regulation and effective social adaptation; affect regulation and mentalisation are acquired through secure attachment relationships; and secure attachment, mentalisation and self-regulation contribute significantly to emotional resilience, which helps us to weather the challenges that life presents.<sup>5,6</sup>

The danger of seeming to neglect the importance of emotion and relating (while emphasising the importance of cognition, molecules and genes) in psychiatry is that we risk promoting the disengagement from neuroscience that Bullmore *et al* argue so passionately against.

- 1 Bullmore E, Fletcher P, Jones PB. (2009). Why psychiatry can't afford to be neurophobic. *Br J Psychiatry* 2009; **194**: 293–5.
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**Authors' reply:** We thank the correspondents for their interest in our article<sup>1</sup> that, following Craddock's polemic,<sup>2</sup> we hoped would provoke some responses and debate. While we would dearly